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ADVISORY DEPARTMENT
OF
THE IMPERIAL COLLEGE OF
TROPICAL AGRICULTURE.

REPORT
ON THE
AGRICULTURAL DEPARTMENT, ST. VINCENT,
FOR THE YEAR
1931.

TRINIDAD.
ISSUED BY THE COMMISSIONER OF AGRICULTURE
FOR THE WEST INDIES.

1932.

[Price Sixpence.]

REPORTS

ON THE

BOTANIC STATION, ECONOMIC PLOTS, AND AGRICULTURAL EDUCATION, ST. VINCENT.

Annual Reports on certain Economic Experiments conducted in connection with the Botanic Station, 1900-2.

Annual Reports on the Botanic Station for the years 1901 and 1902.

Annual Reports on the Botanic Station, Economic Experiments, and Agricultural Education for the years 1902-3 to 1918-31.

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1932.

LETTER OF TRANSMITTAL.

THE IMPERIAL COLLEGE OF TROPICAL AGRICULTURE,
AGRICULTURAL ADVISORY DEPARTMENT,
TRINIDAD,

Ref. No .C.A. 185. 19th May, 1932.

Sir,—I have the honour to transmit the Report on the St. Vincent Agricultural Department for the year ended December 31st, 1931.

2. The appointment of the Cotton Research Officer in 1930 has been followed by the addition to the Agricultural Staff of an Assistant Agricultural Officer.

3. The appointment of Mr. A. C. Shill, M.Sc., A.R.C.S., D.I.C., as Marketing Officer is important in connection with the development of a trade in fruits and vegetables with the Northern Markets.

4. Mr. Shill's visits to the several islands of the Windward and Leeward Groups should help in developing that uniformity of grading and packing which is essential to success.

5. The work of the Department including the development of the Fruit and Vegetable Bureau, the Peasants' Instruction, and a possible further land settlement development are now provided for by the Department's Staff and the cotton seed breeding and cotton research by the Cotton Research Officer.

6. The changed cotton planting season has continued to give good results. The 1930-31 crop was a good one, the average of 153 lb. lint per acre being the second best yield in the past ten years. In 1931, the unusually heavy rain during the last three months of the year resulted in the prospect of a much reduced yield in the 1931-32 season. The continued trade depression has had a very serious effect on the cotton situation, a considerable quantity of the crops of 1929-30 and 1930-31 being still unsold.

7. The first year's working of the Arrowroot Pool appears to have been entirely satisfactory, resulting in increased sales and in increased confidence on the part of the growers in the future of the arrowroot industry in St. Vincent.

8. The Government Fruit and Vegetable Bureau continues to develop. The business done in 1931 was about 50 per cent more than in 1930.

9. In the present time of depression the minor industries of St. Vincent are of great importance and the value of these to the community is greatly increased by the work of the Government Granary where grains are conditioned by heat and stored under conditions which give protection from insect attack. During the past year it appears that the granary dealt with maize only, but it would appear that other grains such as peas and beans might also be disinfected and stored.

10. The success of a second Agricultural and Horticultural Exhibition is recorded.

11. It is with regret that the death of Mr. M. T. Horner is recorded. Mr. Horner as Manager of the Government Fruit and Vegetable Bureau, did useful pioneer work in the early development of the Fruit and Vegetable trade.

I have the honour to be,
Sir,
Your obedient servant,

H. A. BALLOU,
Commissioner of Agriculture,
Imperial College of Tropical Agriculture.

His Honour
THE ADMINISTRATOR,
St. Vincent.

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Staff of the Agricultural Department, St. Vincent.

Agricultural Superintendent and Inspector, Agricultural Credit Societies	T. P. Jackson.
Agricultural Assistant, Manager, Government Fruit and Vegetable Bureau and Inspector, Agricultural Credit Societies (From October 6th, 1931) ...	P. Morrison.
Foreman, Experiment Station, and Agricultural Instructor (Acting until October 5th, 1931) ...	L. Brown.
Cotton Inspector and Government Vaccinating Officer ...	L. Brown.
Foreman, Botanic Station and Inspector, Cotton Stainers Control (To October 5th)	R. Vanloo.
Foreman Botanic and Experiment Stations (From October 6th, 1931)	R. Vanloo.
1st Officer in Training	A. Duncan.
2nd Officer in Training (From October 1st, 1931) ...	K. P. A. Pencheon.
Laboratory Assistant to Cotton Research Officer ...	Miss N. Grant.
Clerical Assistant	Miss D. E. Wall.

COTTON RESEARCH.

Provided by the Empire Cotton Growing Corporation.

Cotton Research Officer ...	S. H. Evelyn, D.I.C.T.A.

REPORT ON THE AGRICULTURAL DEPARTMENT, ST. VINCENT.

FOR THE YEAR ENDED DECEMBER 31st, 1931.

With the exception of the sections "Notes on the Cotton Experiment Station" and "Report on the Government Cotton Ginnery", this Report was written by the Agricultural Superintendent.

Work in the Botanic Gardens and Observations on Plants.

The rainfall measured at the Botanic Gardens for the year was 100·62 inches. It was 20·15 inches more than that recorded for 1930. The average rainfall for the past 38 years was 103·21 inches, therefore the quantity of rain measured was 2·59 inches below the average. For October and November the rainfall was heavy being 16·82 and 12·80 inches respectively.

The Gardens were kept in good condition during the year and were much admired by tourists and other visitors.

During the year under report it was decided that all the plant propagation work should be conducted at the Experiment Station. This decision was arrived at with the view of the concentration of work.

Among other interesting plants growing in the St. Vincent Botanic Gardens there are two specimens of the Baobab, Ethiopian Sour Gourd or Monkey-bread (*Adansonia digitta, L.*) one of which flowered during the year for the first time on record. The specimen is some thirty feet high with an approximate trunk diameter of four feet. The flowers are striking in appearance, white in colour, possessing purplish anthers and are some seven inches in diameter, being borne individually on elongated stalks. The Baobab is a slow growing tree and it has been called "the tree of a thousand years". The traveller, Adanson, after whom the tree is named, saw specimens with dates cut in them of the fourteenth century, and calculated them to be upwards of 5,000 years old. A strong rope is obtained from the bark. The fruit is a large capsule, containing seeds embedded in pulp which is slightly acid and is edible. This tree impresses one forcibly in that the girth is always entirely out of proportion to its height. The trunks of aged trees often possess huge cavities, these are either caused by a fungus attacking the soft wood or deliberately done by the natives of the various parts of Africa where it is found. Such cavities are used at times in which to suspend the dead bodies of those who are refused the honour of burial.

The Blimbing and Carambola, (*Averrhoa Bilimbi, L.*) (*Averrhoa Carambola, L.*) are growing in the Gardens. Both of these trees annually bear fruit; the former is by far the healthier and more vigorous tree of the two. The flowers of both are small, reddish in colour, disposed in racemes arising from the trunk or from the branches. The fruit of the Blimbing resembles a small cucumber, some two inches long and slightly less than one inch across with a thin smooth green rind filled with a decidedly acid juice which some people find pleasant to the taste. The fruit of Carambola is about the size of a hen's egg, with three prominent ridges or angles. This is possibly slightly less acid than the Blimbing. The fruits of both species are used raw, preserved or pickled; the flowers can be made into a conserve. It might be said that the juice of the latter mentioned fruit will remove stains from clothing as effectively as gasolene.

There is one specimen of the somewhat rare climber, *Roupellia grata*, growing in the St. Vincent Botanic Gardens. This plant flowers freely

during the early months of the year. The flowers are of a pale rose colour, fragrant, in dense sessile cymes. The plant is reputed to yield the cream-fruit of Sierra Leone. In St. Vincent it has never set fruit, although artificial pollination has been tried.

Plant Importations.

Seeds of *Alysicarpus rugosus* were received from the Commissioner of Agriculture. These germinated fairly well, and the plants have grown to between five and six feet in height. They are perfectly healthy and it would appear as though this plant might be useful for green dressing purposes.

Work in Nurseries and Distribution of Plants.

The following is a list of plants, seeds, etc., distributed from the nurseries attached to the Botanic and Experiment Stations :—

Economic and Decorative Plants.

Tomato	...	55,600
Onion	...	3,500
Lime	...	5,424
Grape Fruit	...	343
Orange	...	800
Mango (Julie)	...	633
Papaw	...	100
Miscellaneous decorative	...	1,123
Coco-nut	...	356
		67,879

Cuttings.

Sweet Potato	...	126,088
Cassava	...	29,000
		155,088
Miscellaneous seeds	...	630 lb.

From the above it will be seen that large numbers of tomato plants were sent from the nurseries. The number of Julie mango plants distributed constitutes a record. In addition to the above 740 common mango plants growing in various parts of the island were topworked (grafted) with Julie budwood. This work was in charge of the Cotton Inspector and the Foreman, Botanic Gardens who deserve credit for it. Some of the trees that were grafted a little more than two years ago flowered and set fruit during 1931. Within the past two years 1,110 inarched mango plants have been distributed from the nurseries, and 1,217 have been patch budded. This made a total of 2,327 plants for which, in practically every instance, the "Julie" variety was used as the scion. In the very near future these plants will be fruiting and will provide a standardised fruit for the Canadian Market, increasing in numbers as time progresses.

When the work of patch budding started, peasants regarded it with suspicion and it was only after persuasion that they consented to have their trees converted. They have however seen the benefit that will be gained and the position is now the reverse of what it was.

The number of sweet potato cuttings distributed was very large. A portion was sent to the Southern Grenadines to provide planting material for these islands after a protracted drought had been experienced ; they were much appreciated by the recipients.

Inspection and Fumigation of Imported Plants and Seeds.

The following gives a list of plants, etc., which which were imported and fumigated under the Importation of Plant Diseases Prevention Ordinance, 1906 :—

Vegetable Seeds	...	58 packages
Miscellaneous	...	40 parcels
Rose plants	...	1 crate
Plumbago and others	...	3 crates

The following Report of the Cotton Experiment Station has been prepared by Mr. S. H. Evelyn, Cotton Research Officer, St. Vincent.

Report of the Cotton Experiment Station, Season 1931-32.

The following account has been extracted in greater part from a report written by Dr. S. C. Harland and S. H. Evelyn, which will appear in the Empire Cotton Growing Corporation's publication of Reports from Experiment Stations.

The experimental work falls under the following main divisions :—

(1) *The Breeding and Propagation of a Standard Strain of Superfine Sea Island Cotton.* Of the 50 pedigree selections grown at the Station in 1930 only eight were retained. These were all of Superfine length, 57 m.m. or over, and the self fertilized seed of six of these was sufficient to plant a Multiplication Plot of 10 acres at Pembroke Estate. The plot was in an isolated position, and will give enough seed this year to plant about 1,000 acres. It is hoped that the total cotton area next season will not exceed 500 acres, so that the crop should be of standard Superfine quality. Selection work has been continued with Strains 13 and 46 as these are considered to represent an improvement over the original standard Superfine pure line, V.135, bred out by Dr. Harland in 1918.

Attention will in future be devoted to strengthening the agricultural properties of Superfine by elimination of 'shedders'. Sufficient seed will be available for a new multiplication plot in the forthcoming season.

(2) *The Production of Strains resistant to Angular Leaf Spot.* Observations have been conducted throughout the season on the rate of incidence of Angular Leaf Spot in all of the Pedigree Selections. As a result it is considered that all of the pure Sea Island Strains now possess a considerable degree of resistance, and so, until a really bad Angular Leaf Spot year is encountered, the results will not be further discussed.

(3) *The Production of Strains resistant to Shedding.* It has been established that the tendency to shed buds and bolls is definitely hereditary, and two series of lines have been isolated—one which sheds practically no buds before flowering and the other which sheds a considerable number. From a practical point of view it is believed that the highest yielding strains (expressed as mean number of bolls per plant) have been produced by selection of parent plant with initial low bud shedding. The experiment is being continued.

(4) *Hydridization Experiments.* As a result of genetic studies by Dr. Harland it has been found that the character Red Leaf, weak petal spot, of the Perennial Peruvian type Trinidad Red Kidney is allelomorphic to the character green plant body, strong petal spot. If red is transferred to a Sea Island plant body it will be possible to distinguish any natural crosses in the commercial crop, since all plants with either a green plant body or strong petal spot are rogues. By repeated back crossing the production of a red leaved Sea Island strain has been accomplished. As impurity in lint length is still present—further selection will be necessary before this strain can be put into commercial cultivation.

(5) *Selection Experiments with Moco.* Selection experiments were continued with the Moco Strains from North Brazil. Eighteen selections were grown this year and have been examined. Many of the strains were impure but some have bred true to a fine quality staple equal or superior to the best Egyptian. It is hoped that some of these will be available for multiplication after another season's work. A selection grown this season in Union Island gave such good results that it has been decided to try out a small area there in July.

(6) *Agricultural Experiments.* Three experiments of an agricultural nature were carried out this season.

(*a*) A manurial experiment.

(*b*) An experiment to determine the optimum period after germination to apply fertilizer.

(*c*) An experiment to determine the effect on yield of two plants per hole as against one plant per hole.

The Latin Square, Block System and Beaven's Half Strip Method were used respectively. The results will be discussed with Dr. Mason, Physiologist of the Cotton Research Station, Trinidad, and Professor Shephard, Professor of Economics, Imperial College of Tropical Agriculture, before publication.

Experiments with Ground Provisions.

Cassava Varietal Experiments.

A varietal experiment with cassava seedlings, raised some time ago by the Agricultural Department was conducted during the year. There were eleven varieties tried against one another and they were planted on May 21st and reaped on February 1st. There were two plots of each variety, the area of the plots was $\frac{1}{8\frac{1}{2}}$ acre.

The results are given in the following table, they have been calculated to pounds of roots per acre.

Variety.		Calculated yield per acre. lb
V. 23	...	25,499
V. 15	...	24,932
V. 22	...	22,914
Bois West	...	20,770
V. 13	...	20,359
V. 14	...	18,415
V. 25	...	14,593
V. 21	...	14,444
V. 19	...	11,634
V. 20	...	9,853
V. 24	...	7,336

The variety Bois West is one of the standard varieties in St. Vincent. Three of the varieties tried against this gave calculated returns of 4,729 lb., 3,152 lb. and 2,144 lb. in excess of the standard variety. These were V. 23, V. 15 and V. 22. Planting material of the first two mentioned will be propagated for distribution for trial purposes on estates.

Yam Varietal and Staking Experiments.

Nine varieties of yams were planted for this experiment. The plots were $\frac{1}{17\frac{1}{2}}$ acre in area and were repeated three times. One half of the varieties were staked and the other half unstaked. Plots were planted on March 18th and reaped on December 23rd. The results are given below calculated as pounds of tubers per acre.

Variety.	Unstaked.	Staked.	Increase or decrease over unstaked.
Bottle Necked Lisbon ...	16,108	29,154	+ 13,046
Seal Top ...	7,224	14,964	+ 7,740
Horn ...	8,428	15,652	+ 7,224
Oriental ...	3,014	8,514	+ 5,500
Danish ...	4,472	9,890	+ 5,418
Crop ...	4,128	9,202	+ 5,074
Lisbon ...	5,504	9,288	+ 3,784
Light Red ...	9,632	9,374	— 258
Bugle Horn ...	9,460	8,588	— 872

All of the varieties which were staked, with the exception of two, gave increased yields over the unstaked plots, and this experiment indicates that yams give a much greater return when provided with stakes than when unstaked. A simple form of staking could be obtained by planting a crop of maize through yams, the stalks being allowed to remain after the ears have been reaped.

Manurial Experiment.

Arrowroot.

The following manurial experiment was carried out during the year. The area of land for this was limited and it is of a simple nature. All the manures, with the exception of pen manure and cotton seed meal, were applied when the plants were between two and three inches high, the pen manure and cotton seed meal were put into the land immediately before the plots were planted.

Each plot was $\frac{1}{150}$ acre in area; they were planted on May 26th and reaped on March 10th. The results are put forward calculated as pounds of rhizomes per acre.

Series.	Description of manurial treatment.	Yield of rhizomes per acre Plots. I.	II.	III.	Average.	Percentage increase or decrease compared with unmanured plots.
1	No manure ...	22,531	20,728	18,775	20,678	—
2	Nitrogen 30 lb. per acre as Sulphate of Ammonia ...	25,234	21,329	22,531	23,031	+ 11·3
3	Phosphate 40 lb. per acre as Basic Slag ...	22,831	17,874	21,179	20,628	— ·24
4	Potash, 30 lb. per acre as Sulphate of Potash ...	21,630	26,586	23,882	24,033	+ 16·2
5	Phosphate (40) Potash (30) ...	25,084	19,226	21,479	21,930	+ 6·0
6	Nitrogen (30) Phosphate (40) Potash (30) ...	21,780	19,376	20,879	20,678	—
7	Cotton Seed Meal 600 lb. per acre ...	23,732	22,380	25,835	23,982	+ 15·9
8	Phosphate 40 lb. Potash 30 „ Cotton Seed Meal 600 lb. ...	23,686	19,739	23,141	22,189	+ 7·3
9	Pen Manure 10 tons per acre ...	24,333	23,883	28,239	25,485	+ 23·2
10	Mulched Gliricidia prunings ...	29,440	31,993	28,389	29,941	+ 44·7

Large increases over the no manure plot were obtained from the plots mulched with Gliricidia (Madura) prunings. During the growing period the foliage of the plants on these plots were a darker green in colour and more vigorous than those of the others, this fact was very noticeable. Undoubtedly the arrowroot plant responds in a marked degree when prunings of Gliricidia are applied, and the question arises whether this is wholly due to the manurial value of such a dressing. The mulch possibly had, in addition to the manurial, a mechanical effect on the soil, and this fact is worth while testing out by mulching with prunings obtained from any type of plant.

Applications of pen manure gave an increase of 25 per cent, that from cotton seed meal and potash some 16 per cent, nitrogen alone some 7 per cent.

When phosphates were added to cotton seed meal the increase returns were only some 7 per cent, and when applied alone slightly decreased returns were obtained indicating that phosphates had on this occasion a depressing effect on the crop.

In an experiment conducted by Dr. Harland in 1918, practically the same results were obtained by applications of Gliricidia prunings. In this instance an increase on the no manure plot of 34 per cent was obtained, and the following remark was made—"It is certain, however, that the arrowroot grower will be well advised to apply as much coarse organic material to the soil as possible." In this trial pen manure was not introduced but phosphate and potash gave increases of 17·4 per cent, phosphate, potash and cotton seed meal 18·7 per cent, potash alone 11·6 per cent, phosphates 14·8 per cent and nitrogen and sulphate of ammonia only 1·6 per cent. The returns in 1918 from the plot that had phosphates applied, was different to those of 1931. Considering results from both trials, they would indicate that this type of manure should be used with caution.

Tomatoes. Varietal and Distance Planting.

Towards the end of the period under report varietal tomato and distance planting experiments were laid out. At the time of writing these have not been completed. Marglobe, Livingstone Globe, John Baer and Bonny Best were used. They were laid out according to the plan put forward in Tropical Agriculture Vol. VIII, No. 9. These were planted 4 feet × 3 feet, 4 feet × 2 feet, and 3 feet × 2 feet, and consisted of five blocks of twelve plots each. Farm yard manure at the rate of ten tons per acre was applied to each plot. Although this experiment is not completed it might be said that very great difficulty was experienced in obtaining a good stand due to repeated attacks of mole crickets, and when a stand was obtained many plants were lost on account of fungoid diseases and attacks of eel worm.

Ground Nut Varieties.

Experiments were conducted with four varieties of ground nuts. These were planted on May 15th and reaped on October 24th. There were three plots of each grown; the following figures give the mean calculated yield per acre for each.

Variety.	Calculated yield dried nuts, lb.			Calculated yield per acre in lb. dried nut.
	Plot 1.	Plot 2.	Plot 3.	
Local ...	2,420	1,573	1,694	1,895
African ...	1,936	1,452	2,299	1,895
Improved ...	1,936	1,936	1,674	1,855
Virginia ...	2,057	1,573	1,573	1,734

The variety "Local" gave yields on a par with African. This variety is, on the whole a more reliable yielder than the others.

Sweet Potato Varieties.

This experiment was laid out with a view of testing the cropping capabilities of the variety New Jersey against some of the well known local varieties. This potato was imported some time ago with the view of growing it for the Canadian Market.

The variety Emma is one that was extensively grown before V. 52 was raised. Stranger is a seedling which appeared among a plot of other varieties of sweet potatoes; it is possibly a bud sport. The plots were planted on June 4th and reaped on October 3rd each was $\frac{1}{160}$ acre in area. Results are put forward calculated as pounds of tubers per acre.

Variety.		Calculated yield per acre in lb. potatoes.
V. 52	...	12,080
Stranger	...	8,320
Emma	...	7,840
New Jersey	...	2,400

From this it will be seen that New Jersey is decidedly a shy bearer. V. 52 maintains its reputation as a dependable heavy yielder.

Work connected with Insect and Fungus Pests and their control.

The Cotton Worm (*Alabama argillacea.* Hubn.)

There were several weak attacks of cotton caterpillar experienced during the year. Only in one instance was it found necessary to apply insecticides and this occurred on the Leeward Coast. This pest was not responsible for any material damage to the crop during 1931.

The Pink Bollworm (*Platyedra gossypiella*).

The pink bollworm first made its appearance during the season on cotton growing at the Experiment Station on January 26th. This was 148 days after the crop was planted. In 1930 pink bollworm was first noticed 146 days and in the previous year to this 129 days after planting took place. It would seem as though pink bollworm is under good control. The Experiment Station is within a stone's throw of the Government Cotton Ginnery. This Institution handles a large proportion of the cotton produced in the Island which is brought in as seed cotton, and towards the end of crop is infested with this pest. If the control measures adopted by the Ginnery were not effective it is reasonable to assume that the Cotton Crop growing at the Experiment Station would be heavily infected during the cotton season. All cotton seeds from the gins are daily put through the Simon's Patent Heater and which results in 100 per cent mortality of any pink bollworm in the seed.

Pink bollworm was not responsible for material damage to the cotton crop during 1931.

The Cotton Stainer (*Dysdercus Delauneyi*).

The work carried out during the year for the control of cotton stainers was on similar lines to that of previous seasons.

The Close Season for 1931 for cotton was from May 15th to August 31st.

Eighteen John Bull trees (*Thespesia populnea*) and thirty three Silk Cotton trees (*Eriodendron anfractuosum*) were destroyed during the year.

The following table gives the number of stainers accounted for at the Experiment Station for the past nine years:—

Months.	1923.	1924.	1925.	1926.	1927.	1928.	1929.	1930.	1931.
January ...	37,878	20,086	1,449	2,850	—	29,298	120	63	114
February ...	63,800	2,800	7,723	—	105	7,217	7,668	91	303
March ...	51,880	930	6,231	791	1,072	909	7,460	405	18,643
April ...	3,002	1,225	2,400	5,136	334	42,648	—	13,560	7,215
May ...	817	52	716	100	3,660	—	273	4,430	—
June ...	908	—	—	—	3,060	101	163	—	—
July ...	550	—	—	—	—	2	20	673	—
August ...	87	—	1	—	—	705	1,597	179	—
September ...	3	—	1	—	—	973	1	—	—
October ...	8	—	—	—	—	758	—	—	40
November ...	—	—	—	—	—	538	—	—	18
December ...	377	57	550	—	150	—	1	—	—

During the year stainers were at no time present in large numbers at the Experiment Station.

Early in the year stainers were found on cotton growing in the high Windward District of the Island; they increased from then until the destruction of cotton plants commenced in the month of April. The increase was of a normal nature.

Planters on the whole gave careful attention to the destruction of cotton plants before the beginning of the Close Season.

Red Ring of Coco-Nuts.

A somewhat detailed description of this nema (*Aphelenchus cocophilus*) was given in the report on the Agricultural Department for 1929. Any person interested can consult this publication.

This disease is not increasing in St. Vincent.

Arrowroot Worm (*Calpodes ethlius*).

In June, attacks of arrowroot worms were experienced; these increased during the months of July and August. In the latter mentioned month, Assistant Professor Mr. F. W. Urich, F.E.S., C.M.Z.S., of the Imperial College of Tropical Agriculture, visited St. Vincent to investigate the situation.

It is seldom that a season passes without this pest attacking the arrowroot crop of the Island. Although this insect could be controlled by means of arsenical insecticides there is no doubt that by so doing damage would be done to the foliage of the crop by labourers trampling through the fields when carrying out the dusting operations.

There are two well known parasites or predators of Calpodes. In the first class the egg parasite *Trichogramma minutum* can be placed, and in the second the well-known Jack Spaniard, (*Polistes annularis*). There are others but the two mentioned are the most important.

Attacks of the arrowroot worm are first experienced on estates situated on the Windward Coast, and these are more severe in this locality than on the Leeward part of the Island. The Windward Coast is exposed to the North East trade winds, and consequently the estates in this part are badly windswept. A mountain range thickly covered with forest growth protects the Leeward Coast from these.

There is no doubt that both predators and parasites require protected positions for their breeding places. This is realised by some planters who have on the Windward Coast, built erections covered with grass with a view of inducing Jack Spaniards to build their nests in them. If this were put into regular

practice by all interested persons and if, in addition, windbreaks or blocks of thick vegetation were planted in the vicinity of arrowroot cultivation, an atmosphere suited for the breeding of these insects would be obtained which in all probability would result in minimising the severity of the attacks of arrowroot worm.

Other Pests.

Bronze Beetle (*Colaspis fastidiosa*) was present in cotton cultivation, but did not do as much damage as it has in past years.

Sclerotium rolfsii. This fungus caused some loss to cotton growers during the year. In the early period of the cotton season heavy rains fell, and this, combined in some cases with the neglect of weeding operations, provided an environment conducive to the growth of the fungus.

Black Scale (*Saissetia nigra*) and White Scale (*Hemichionaspis minor*) were, as usual, common on cotton plants towards the end of the season. They were not responsible for any damage.

Bush Bugs (*Nezara viridula*) and others. The number of these found on various crops may be regarded as normal.

Tomatoes.

Blossom End Rot. This disease was very common on tomatoes and accounted for serious losses. As stated in the Report for 1930 the disease is induced by a sudden check to the water supply, or to excessive waterings, therefore aeration of the soil decreases the tendency to attacks. There is also a distinct varietal difference in susceptibility to this disease. A cross suggested by Dr. Harland between Bonny Best, a commercial variety, which is very susceptible in St. Vincent to Blossom End Rot and an indigenous small fruited variety which is only used for cooking purposes and which under St. Vincent conditions has shown immunity to Blossom End Rot was made in 1931 by Mr. S. H. Evelyn. The F 1 of the cross, of which only five plants were saved from the depredations of Mole Crickets, was planted in a bed adjacent to plants of the Bonny Best parent. No Blossom End Rot has so far been observed in the F 1 whereas over 50 per cent of the Bony Best fruit were attacked.

The fruit of the F 1 are intermediate in size between the parents, some attaining the weight of 37 grams but most of them lying around the mean of 26 grams or about double the weight of the native variety. The flesh is of good flavour although when eaten with the seeds has the tart flavour of the native though not to such an extent. In shape, the fruit are mostly round-conical with no defined loculi. On ripening, the marketable colour develops although on the tree the colour is too light. The loculi number of the native fruit is generally two or three, that of the F 1 two, three, four and five, and that of Bonny Best four, five and six. The skin is thick and tough even when mature. A back cross of the F 1 to Bonny Best is now being contemplated.

Sclerotium rolfsii attacks tomatoes when growing in damp situations. This disease is generally known as "damping off fungus". A specimen of a tomato plant attacked by this disease was sent to the Commissioner of Agriculture who submitted it to Dr. Briton-Jones, Professor of Mycology and Bacteriology, Imperial College of Tropical Agriculture. He submitted a short report on this and it is specially interesting in that it shows the connection which often exists between insect and fungus attacks. It states—"This is a combined insect and fungus attack. The insect was the first offender and was probably mole cricket. The fungus is *Sclerotium rolfsii* which is a general parasite of garden crops throughout the British West Indies under conditions of excessive soil moisture. Control of *S. Rolfsii*, therefore, is confined to the application of measures resulting in reduction of soil moisture. These largely depend on local conditions". In other words drainage of land would help considerably in connection with the control of this disease.

Bubbly Fruit Rot. The losses due to this disease were significant but not serious. Infection takes place through injuries to the fruit either caused by

insect punctures or by mechanical means. There is more fruit damaged by the finger nails of labourers than is realised, and any grower of tomatoes can prove this fact for himself by an examination of unripe tomatoes that have been picked for export.

The diseases which attack tomatoes when grown in the Tropics are of a serious nature, and it would be sound policy not to plant this crop in the same land two seasons in succession. Eel worm has recently been found on the roots of tomato plants, but it is not known to what extent plants are infested. The finding of this pest emphasises the recommendation just made as to the question of crop rotation.

Mole Crickets (*Gryllotalpa sp.*). This insect has caused considerable worry, trouble and loss to tomato growers. It lives mostly underground where it constructs tunnels in which it lays its eggs, they are strictly nocturnal in habit, and remain in their burrows during the day. Most text books recommend that they should be controlled by use of poison bait, sweetened and poisoned bran is usually recommended. Light traps are at times suggested and another method of control is trapping in tobacco tins, containing a small amount of water sunk in the soil, with the top level with the surface of the soil, the insects fall into the water, and being unable to climb out may be killed in the morning. Another suggestion that has been made is the use of naphthalene which acts as a deterrent when placed around the plant. Split bamboo joints placed around the young plants afford some protection and soap suds if used in sufficient quantities bring the insects to the surface, when they can easily be destroyed. All of the above have been tried with greater or less success, but none have been sufficiently efficatious to prevent a large proportion of young tomato plants, which were growing at the time that the various methods of control were made, from being cut down by this pest.

It was observed during the year at the Experiment Station that only well grown seedlings some eight or nine inches high should be planted. It would appear that seedlings about this height are less attractive to mole crickets than ones more immature. Another important point is to plant the crop as soon after the land has been cultivated as possible, if practicable the same day. The reason for this is not far to seek for the cultivation of the land destroys the burrows of these insects, and it takes some time for them to regain their normal method of existence and movement. It must not be lost sight of that the attack of mole crickets takes place very soon after planting, the critical period being the first forty eight hours. The newly planted seedlings have a powerful attraction for these insects, which decreases as the plants become established.

In cases where special varieties which cannot be replaced are planted it will be found that a tea-spoon full of carbon bisulphide poured into a hole a few inches deep adjacent to the seedling will drive away mole crickets from the vicinity of the plant.

Miscellaneous.

The usual pests were found on maize, cacao and peas, but none assumed serious proportions.

At the suggestion of the Commissioner of Agriculture the following is put forward for general information.

Summary of Plant and Animal Legislation.

Under Act No. 306 of 1869 power is conferred to prohibit the importation of cattle, sheep or other animals into the Colony which are likely to be a means of introducing infectious or contagious diseases, and to prevent the spread of such within the Colony. This was amended by No. 20 of 1919 in which the term animals which appeared in the 1869 Ordinance was clearly defined. Regulations under this Act were gazetted on July 27th, 1911 and on November 18th, 1920. The latter revoked the former ; it provided for the

examination of imported animals by the Veterinary Officer or Colonial Surgeon and, when necessary, for the quarantine of such. A further Order in Council was gazetted on April 15th, 1924, under the same Ordinance, prohibiting the importation of cattle, sheep or other animals and fodder and litter from any part or place in the United Kingdom or the Channel Islands. And on May 13th of the same year Jamaica was added to the previously named places. The Orders enacted during 1924 were made with the view of preventing Foot and Mouth Diseases from entering the Colony.

The first step towards plant protection was made in 1895 when Ordinance No. 19 of the same year was passed. This was repealed by No. 5 of 1905 which in turn was repealed by No. 9 of 1906. This provides that all imported plants, etc., or packages in which they are packed, shall be fumigated or disinfected. Under Section 4 of this Ordinance, the Governor in Council may, by Notice, prohibit the importation, either directly or indirectly, of any plants, packages or articles or things likely to be the means of introducing plant diseases into the Colony. The following is a list of the prohibitions enforced :—

"From all countries of Central and South America, and the islands of Cuba, Jamaica and Trinidad :—of all coco-nuts in husks and all growing plants or parts of plants of coco-nuts, or any earth or packing material associated with them, or any pruning knives which have been used in the cultivation thereof".

"From Ceylon, Natal, South India, Mauritius and the Strait Settlements :—of all plants, seeds, berries, and any soil or vegetable matter used for packing or covering the same".

"From the Colony of Trinidad and Tobago :—of any suckers, roots, fruit or any portion of the banana plant, or any earth, soil or vegetable matter used for packing or covering the same".

In February 1920, the above Ordinance was amended. The object of the amendment was to give the necessary authority for the examination of plants, seeds, etc., for pests and diseases on board a vessel in port, and to prohibit the landing of these if infected, together with any goods forming any part of the cargo, likely to be the means of introducing any fungoid disease, or insect pest which may be known to be injurious to plant life. Section 2 of the Ordinance reads as follows :—

"When plants are brought to this Colony, the Governor is hereby authorised to have the same examined before any of them or any part of the cargo on the vessel in which they are brought to the Colony are landed ; and, if the Governor is satisfied that any such plants or any part of them are infected with any fungoid disease or insect pest which may be known to be injurious to plant life, he may prohibit the landing of the same ; and if he is satisfied that any such fungoid disease or insect pest is likely to be introduced into the Colony by means of any of the goods constituting the remainder of the vessel's cargo in case the same be landed, he may prohibit the landing of such remainder or any part thereof".

"(3) Any person landing or attempting to land any goods on contravention of any prohibition by the Governor under the two immediately preceding subsections shall be liable on summary conviction of a fine not exceeding one hundred pounds, and the goods so landed or attempted to be landed shall be forfeited and may be destroyed or otherwise disposed of as the Governor may direct".

A Proclamation was published on June 8th, 1919, prohibiting the importation of citrus plants and parts thereof from any country or place other than Dominica, Montserrat and St. Lucia. This, however, gave the Agricultural Superintendent authority to import for scientific purposes ; this Officer, however, was to report such importations to His Excellency the Governor.

A Notice gazetted on June 29th, 1925, amended the above and prohibited the importation of lime plants or parts thereof from Dominica, Saint Christopher and Nevis.

During 1920 three Orders in Council were promulgated. The first two prohibited the importation of any part of the sugar-cane plant from certain places. Subsequently the importation of sugar-cane plants, roots or cuttings in any form or from any place was prohibited.

The plant Diseases Prevention Ordinance was amended in 1930 by Ordinance No. 8. In this the Governor in Council may by Proclamation absolutely prohibit the importation into the Colony of any fruit (other than canned, candied or other processed fruit) vegetables, plants, earth, etc., which are likely to be a means of introducing any plant disease into the Colony. In November 1930 the importation of Spanish grown grapes was, by Proclamation, prohibited.

In 1931 an Ordinance to provide for the Exportation of Fruit was enacted. This provided for the packing, inspection, labelling, etc., of fruit shipped to certain markets.

The first law promulgated for the protection of the Cotton Industry was No. 3 of 1911, subsequent ones were No. 16 of 1916, No. 3 of 1918, No. 6 of 1918, No. 32 of 1919, No. 15 of 1922, No. 11 of 1923 and No. 6 of 1924. Those enacted previous to 1924 were repealed. This and the Regulations made thereunder were drawn up primarily to control cotton stainer and pink bollworm.

It provides in the main :—

(*a*) For the appointment of Inspectors.
(*b*) For the Control of Ginneries.
(*c*) Fumigation of seed.
(*d*) Transport of seed and fumigation of bags.
(*e*) Disposal of seed, and seed cotton and cotton seed meal.
(*f*) Storage of cotton seed, seed cotton „ „ „ „
(*g*) Destruction of certain trees and shrubs.
(*h*) Control of carbon bisulphide.

When the Simon's Patent Heater was imported for controlling pink bollworm in cotton seed it was found necessary to amend the Regulations made under Section 15 of this Ordinance. This was done and they were gazetted on October 25th, 1927. In 1928 a further slight amendment was made to the rules ; this was in connection with the heating of cotton seed by the Patent Heater.

Union Island.

The following table gives the rainfall recorded at Union Island during 1931. The readings were taken by the District Officer, Southern Grenadines.

Month.		Rainfall.
January	...	1·55
February	...	·28
March	...	·42
April	...	1·87
May	...	·42
June	...	3·27
July	...	4·90
August	...	3·94
September	...	3·49
October	...	6·84
November	...	5·67
December	...	1·50
Total	...	34·15

The conditions prevailing at Union Island during the first five months of the year approached those of drought. Large quantities of planting material were sent to the Southern Grenadines when the drought broke. Among these may be mentioned 90,000 sweet potato cuttings and 29,000 cassava cuttings, broom corn and other plants and seeds were in addition sent.

Progress in Chief Industries.

Cotton Industry.

The return obtained from the Sea Island cotton crop for the season 1930-31 was 605,280 lb. of lint; the area was 3,955 acres, therefore the yield per acre works out at approximately 153 lb. of lint. This is slightly better than that for the previous season which gave the heaviest yield per acre, with one exception for the past decade, the exception was 1922-23 when a return of 162 lb. of lint was recorded.

Following the procedure of previous years, the appended tables are given. In these are put forward areas, and the number of peasant and estate growers of cotton for the past two seasons.

TABLE 1.

1931-32.

			Sea Island.					
			Acres	R.	P.	Acres	R.	P.
894	Peasants, St. Vincent		941	0	8			
43	„ Bequia		22	0	14			
2	„ Battawia		3	0	0			
939						966	0	22
18	Large Growers, 32 Estates, St. Vincent		731	0	0			
2	„ „ 2 „	Grenadines	57	0	0			
20		34				788	0	0
		Total Sea Island				1,754	0	22

		Marie Galante.					
		Acres	R.	P.	Acres	R.	P.
212	Peasants, Union Island	634	3	8			
35	„ Canouan	71	2	0			
247					706	1	8
3	Large Growers, Grenadines				180	0	0
	Total Marie Galante				886	1	8

TABLE 2.

1930-31.

			Sea Island.					
			Acres	R.	P.	Acres	R.	P.
1,427	Peasants, St. Vincent		1,657	1	6			
74	„ Bequia		27	2	34			
2	„ Battawia		18	0	0			
1,503						1,703	0	0
23	Large Growers, 44 Estates, St. Vincent		2,202	0	0			
2	„ „ 2 „	Grenadines	50	0	0			
25		46				2,252	0	0
		Total Sea Island				3,955	0	0

		Marie Galante.					
		Acres	R.	P.	Acres	R.	P.
217	Peasants, Union Island	704	0	25			
36	„ Canouan	72	2	0			
253					776	2	25
2	Large Growers, Grenadines				265	0	0
	Total Marie Galante				1,041	2	25

From the preceding it will be seen that less than half of the area of Sea Island cotton was planted during the season 1931-32 when comparison is made with the previous one; there was a decrease of 2,201 acres. In 1930-31 there were 1,503 peasant growers while there were only 939 during the period under report, a decrease of 564 persons.

When comparing the areas under Marie Galante cotton there appears a decrease of 155 acres, but the number of growers shows no material change.

The reason for the decreased area is not far to seek. Sea Island cotton is affected, like other commodities, by the world wide trade depression. There are large stocks in England unsold, and the price of the raw material has declined. At the time of writing it is about half of what it was twelve months ago. The decreased demand is largely due to the competition of artificial silks, and although the superiority of articles made from Sea Island cotton is appreciated, this is not sufficiently well known to induce buyers to pay a higher price for them. It is proposed to hold a Conference* of cotton growers in the near future when matters pertaining to the preceding will be discussed.

Figures as regards yield per acre for the 1931-32 crop are not to hand, but the return will not be as good as that for the preceding two seasons. The season commenced on September 1st, and during October and November heavy rains were experienced. In some places young plants were washed out of the ground, and the soil was waterlogged for a considerable period of time. In such circumstances weeding operations became difficult. Some growers, on account of receipt of depressed market reports, made but half-hearted attempts to cope with the difficulty, realising that poor prices would be obtained for their cotton, and that in all probability a long period would elapse before sales were effected.

Insect pests were not responsible for material damage. Pink bollworm was present, and cotton caterpillars were found, towards the end of the season stainers were in evidence but they did not appear to breed as rapidly except in one locality as in previous seasons. No reason for this can be given.

In the following table the areas under Sea Island cotton for the decade are given :—

TABLE 3.

Crops.	Area planted. Acres.	Weight of lint, lb.	Weight of lint. per acre per lb.
1922–23	3,562	575,640	162
1923–24	3,387	473,248	140
1924–25	3,294	449,295	136
1925–26	4,893	585,483	120
1926–27	6,156	507,240	82
1927–28	3,364	328,188	97
1928–29	3,386	263,808	79
1929–30	1,758	262,382	150
1930–31	3,955	605,280	153
1931–32	1,802	200,000†	111†

* A Conference of Cotton Growers was held in Barbados from March 31st to April 7th 1932.

† Estimated.

Following the procedure adopted in previous years the annexed table has been compiled. It shows the quantity of Sea Island cotton exported for the periods indicated.

TABLE 4.

Years.		Export of lint, lb.
1922	...	338,279
1923	...	585,143
1924	...	520,368
1925	...	473,219
1926	...	588,793
1927	...	446,274
1928	...	349,246
1929	...	282,903
1930	...	256,167
1931	...	456,089

The Sea Island cotton exported was valued according to Treasury returns at £25,463.

The quantity of Marie Galante cotton lint exported was 33,809 lb. It was valued at £704.

Cacao Industry.

The following table gives the amount of cacao exported during the past decade:—

TABLE 5.

Years.		Weight, lb.
1922	...	137,349
1923	...	121,374
1924	...	138,910
1925	..	154,821
1926	...	174,599
1927	...	135,490
1928	...	179,918
1229	...	156,405
1930	...	180,373
1931	...	146,990

The exports of cacao were valued by Treasury Officials at £2,390.

Cacao has felt, with other raw materials the effect of world wide economic depression. According to figures published by the Agricultural Society of Trinidad, the price per cwt of cacao in New York during the early part of 1931 was 40/3 in the following July 35/- and in December 26/10. The price for the same article in London for similar periods of time was 48/10, 42/- to 52/ and 40/- to 50/- per cwt. For purposes of comparison the price obtaining during 1930 are given. During January the price in New York was 55/5, in July 47/10 and in December 40/10 per cwt. The London prices for the months mentioned were 61/-, 55/- to 64/- and 50/4 to 56/- per cwt. These figures are self explanatory.

Starch.

The St. Vincent Co-operative Arrowroot Association now handles and exports all the arrowroot produced in the Colony. The blending and grading are done by them, and the prices offered for this commodity are fixed by the Association. This Association has been the means of placing the arrowroot industry on a sound business footing and it now has the confidence of all the growers of arrowroot. The stabalising of the marketing of this commodity will result in the planting of an increased area of arrowroot of some 25 to 30 per cent during the coming year.

ERRATUM.

Under Heading "Starch", line 6, please read "stabilizing" instead of "stabalising".

The quantity of arrowroot exported amounted to 3,532,327 lb. which was valued at £44,915. Of this amount 1,980,809 lb. were absorbed by the United States of America and 1,017,193 lb., were shipped to the United Kingdom. Canada took 246,956 lb., Holland 112,311 lb., France 31,115 lb., Germany 13,920 lb., and the remainder 129,113 lb. was exported to West Indian or Central American colonies.

The prices obtained for arrowroot were, on the whole, remunerative.

The following table gives the exports of arrowroot and cassava for the past ten years.

TABLE 6.

Year.	Arrowroot. lb.	Value. £	Cassava. lb.	Value. £
1922	2,692,130	26,141	166,333	1,482
1923	2,177,182	31,829	366,085	3,700
1924	2,952,537	51,361	634,631	6,838
1925	3,190,412	53,174	470,284	4,160
1926	3,291,553	45,807	443,075	4,077
1927	3,195,487	53,309	543,681	4,904
1928	3,870,420	64,508	392,610	3,272
1929	3,573,759	59,563	551,512	4,595
1930	3,590,348	59,019	562,327	4,688
1931	3,532,327	44,915	587,071	3,662

Syrup and Sugar Industry.

During the year under report 500 tons of sugar valued at £5,100 were exported from the island. In addition 222,057 gallons of syrup valued at £8,380 were sent out of the Colony.

As mentioned in previous reports, St. Vincent possesses an efficient modern rum distillery. Practically all of this rum is exported to intercolonial markets or is consumed locally. This is a matter of importance at this junction when the consumption and demand for this spirit in the United Kingdom is decreasing.

The exports of sugar and syrup for the past ten years are given below:—

TABLE 7.

Year.	Sugar lb.	Value £	Syrup Gallons.	Value £	Total Value £
1922	150,080	1,264	134,784	9,862	11,126
1923	145,944	1,864	275,932	18,711	20,574
1924	22,400	280	261,127	15,578	16,038
1925	...	...	268,118	19,672	19,672
1926	...	...	337,099	16,523	16,523
1927	839,000	6,947	171,063	10,496	17,443
1928	2,081,408	14,193	167,044	9,471	23,671
1929	2,408,000	14,095	287,941	12,562	26,671
1930	1,834,560	9,209	183,786	7,360	16,569
1931	1,222,000	5,100	222,057	8,380	13,480

In the following table sugar has been equated into terms of syrup and syrup into terms of sugar, it being estimated that 300 gallons of syrup are equal to one ton of sugar.

TABLE 8.

Year.	Syrup, Gallons.		Sugar, Tons.
1922 ...	154,884	Equal to	516
1923 ...	295,432	,, ,,	984
1924 ...	264,127	,, ,,	880
1925 ...	368,118	,, ,,	1,220
1926 ...	337,099	,, ,,	1,123
1927 ...	283,563	,, ,,	945
1928 ...	445,744	,, ,,	1,486
1929 ...	610,441	,, ,,	2,035
1930 ...	429,486	,, ,,	1,431
1931 ...	372,057	,, ,,	1,240

Canada received all of the sugar exported, the syrup and molasses were sent in about equal proportions to the United States and Canada, the former mentioned country receiving slightly more than the latter.

Coco-nuts.

The following table gives the exports of copra and coco-nuts for the past ten years :—

TABLE 9.

Exports of Coconuts and Copra—1922—1931.

Year.	COCONUTS.		COPRA.		Total Value. £.
	Number.	Value. £.	Pounds.	Value. £.	
1922	700	6	223,593	2,343	2,349
1923	...	...	356,626	2,959	2,959
1924	4,841	22	645,973	5,430	5,452
1925	9,435	20	661,339	5,512	5,532
1926	20,463	102	762,563	9,826	9,928
1927	11,383	52	1,198,441	10,083	10,135
1928	26,703	113	1,505,093	12,543	12,656
1929	118,500	502	1,879,558	11,396	11,898
1930	66,418	273	1,810,167	11,312	11,585
1931	88,185	366	1,842,477	7,755	8,121

It will be seen that the copra exported was practically on a par with that of the two previous years but there was a decided fall in the value. This crop with others has felt the existing world wide depression. In July last the price for copra in London was £13. 3. 0 per ton, in December it was £15. 12. 6. It is to be sincerely hoped that this upward tendency will be maintained.

Progress in Minor Industries.

Maize (Indian Corn).

The quantity of maize exported showed a decided decrease. It amounted to 16,899 lb. or 325 bushels. There are however, 67,200 or 1,290 bushels in store at the Government Granary. This fact should be considered when the exports for the year are taken into account.

TABLE 10.

Year.	Export, bushels.	Value £.
1922	581	231
1923	4,696	1,326
1924	2,766	752
1925	2,754	627
1926	1,751	388
1927	1,901	619
1928	961	299
1929	808	239
1930	921	210
1931	325	72

The value of corn exported in 1931 according to Treasury figures was £72. This works out at 4/6 per bushel.

Ground-Nuts.

The export of ground-nuts shows a decided decrease. This can be accounted for by the increased area of land that is being planted in arrowroot.

The exports for the past ten years are given below :—

TABLE 11.

Year.	Export, Bushels.	Value £.
1922	8,336	6,214
1923	8,803	5,988
1924	6,195	4,438
1925	5,251	3,794
1926	3,673	2,370
1927	5,067	3,219
1928	6,444	4,176
1929	6,902	4,486
1930	5,557	3,610
1931	3,271	1,090

The value of the ground-nuts exported according to Treasury returns was £1,090.

Peas and Beans.

The quantity of peas and beans exported shows a decided decrease. This does not necessarily mean that there were large reductions in the areas planted, but that more was consumed locally.

TABLE 12.

Year.	Export, Bushels.	Value £.
1922	2,731	1,640
1923	2,482	1,595
1924	1,744	984
1925	1,548	866
1926	965	476
1927	745	352
1928	1,855	876
1929	3,398	1,673
1930	4,150	1,816
1931	1,031	385

Miscellaneous.

The quantity of tomatoes exported was 60,261 lb. valued at £545, animals £4,717, Vegetables £2,735, Fruit £924 and Spices £528.

Rum Industry.

7,780 proof gallons of rum were exported and valued at £1,019. A total 37,920 gallons was distilled.

Manila Hemp.

Towards the end of the year a Hagotan Hemp Machine was imported for experimental purposes from Manila. The problem in connection with Manila Hemp in St. Vincent is the cost of cleaning the fibre. It is too early to say definitely whether the machine will be a success, but so far the output is small being between two and three pounds of fibre per hour. A bale of Manila Hemp was prepared by means of this and has been sent to the Imperial Institution for valuation and report.

Agricultural, Horticultural and Industrial Exhibition.

An Agricultural, Horticultural and Industrial Exhibition was held on Victoria Park on December 11th.

A Central Committee was formed with His Honour Major Peebles, D.S.O., O.B.E., Administrator as Chairman and the Audit Clerk, Mr. C. B. Isaacs acted as Secretary. District Committees, a Grounds Committee and a Fireworks Committee were formed. Seeds were imported for use of exhibitors by the Agricultural Department. Meetings were held at Mesopotamia and Troumaca at which the Agricultural Superintendent spoke with the view of stimulating interest concerning the Exhibition among peasants. School Children at various schools were addressed on the same subject by him. Agricultural Officers when visiting holdings encouraged peasants to participate.

Placards and Leaflets were distributed throughout the island and the Exhibition was widely advertised in all the local newspapers. It was held under the distinguished patronage of His Excellency Sir Thomas Vans Best, K.C.M.G., K.B.E., Governor and Commander-in-Chief of the Windward Islands.

There was a Vehicular Procession which took place on the evening of the day preceding the Exhibition. In this Motor Cars, Lorries, Motor Cycles and Bicycles participated. The number of vehicles which took part in this was not very large, but those which participated indicated that ingenuity and care had been taken in preparing the vehicles for the procession.

In conjunction with the Exhibition a Baby Show was held, the children were arranged in three classes, (1) four months to nine months, (2) over nine months to fifteen months, and (3) over fifteen months to two years.

The Exhibition, apart from the preceding, can be divided into five main parts (*a*) A large rustic pavilion in which the majority of the exhibits were housed. (*b*) A well made octagonal thatched building in which His Honour the Administrator showed samples of all the products of the Colony. This was tastefully decorated and was much admired. (*c*) The Cotton Research Officer showed growing cotton plants, combed lint, and various by-products, such as cotton seed oil, soap, meal, etc., made locally. In addition some beautiful articles manufactured from Sea Island Cotton were obtained through the West India Committee, and exhibited. These consisted of laces, shirts, voiles, handkerchiefs and stockings. They were much appreciated by visitors who took advantage of the opportunity to purchase souvenirs of the Exhibition from this section. (*d*) The Government Fruit and Vegetable Bureau showed fruit and vegetables packed in standard crates for export and (*e*) The St. Vincent Co-Operative Arrowroot Association which made an excellent exhibit of arrowroot and its products consisting of arrowroot plants, rhizomes, graded starch, and cakes, puddings, etc., made from it.

The laying out of the grounds and the erection of buildings, with the exception of that used by His Honour the Administrator, were in the hands of the Agricultural Superintendent who was Chairman of the Grounds Committee.

Father Verbeke and the Rev'd T. E. Newlin also had tents, the former staged a most excellent exhibit of formal mason work and artificial plants and flowers. The Rev'd Newlin exhibited work done by the boys and girls of the Industrial School. The girls exhibited clothing, sweets, fancy work, etc., and the boys joiner's and carpenter's work.

An artistic and illustrated Prize List was compiled and copies were sold. There were over 1,000 exhibits, 400 more than those at the previous Exhibition. The standard of these varied very considerably. Fruit and vegetable exhibits were of indifferent quality and were not numerous. Prizes of £10, £5 and £2 were offered for the best collection of fruit and vegetables grown by a peasant but it was disappointing to find that even such valuable prizes did not induce persons to exhibit in this section. The sections for animal were fairly good, but the best horses in the island were not shown. Some excellent exhibits were shown in the poultry section, a number of White Leghorns being worthy of special mention. Plants and flowers were fair, preserves poor. Some excellent exhibits were shown in the miscellaneous class. There was a good display of shoemaker's work. The standard of the fancy work was on the whole of a high order and housed in the Pavilion made an attractive display. The photography section was good and the Primary School exhibits were better than those shown at the Exhibition of 1930.

There were a number of side-shows which consisted of fortune telling, coconut shies, rifle shooting, etc. A successful tea stall was run by a Committee of ladies.

The function was brought to a close by a spectacular display of fireworks which was much appreciated by the spectators. The display was personally supervised by His Honour the Administrator.

The Exhibition of 1931 was conducted on a much larger scale than that of 1930 and it was a distinct success.

Permanent Exhibition Committee.

St. Vincent participated in two exhibitions during 1931, the British Cotton Textile Exhibition, which was held at the White City in London, and the Buenos Aires Exhibition, which was held at Buenos Aires, Argentine.

The following account has been obtained from a Report on the British Cotton Textile Exhibition submitted by Sir A. Aspinall :—

The stand at the White City was arranged by Mr. T. Dowdall Hampson. One half of the stand was devoted to raw cotton. There was a typical bale of cotton, samples of Sea Island cotton from all the exhibiting islands, and photographs of cotton ginning in the West Indies. Trade samples of all West Indian growths were on view in the offices. A case of samples of Sea Island yarn and manufactured articles were also shown. One part of the stall was dressed with Sea Island Cotton shirtings, net, vests lingerie material and handkerchiefs, lace was also shown. Leaflets were available for distribution giving the names of manufacturers, wholesalers and retailers of goods guaranteed to be made from Sea Island Cotton.

Her Majesty the Queen who was accompanied by Lord Derby and several Cabinet Ministers visited the stand on February 16th and showed great interest in the exhibits. Her Majesty having asked many questions with regard to the handkerchiefs, stockings and lace, graciously accepted a dozen Sea Island cotton pocket handkerchiefs and requested that a complete range of Sea Island cotton stockings manufactured in England, might be sent to Buckingham Palace. Her Majesty was subsequently graciously pleased to order a dozen pairs of these stockings.

The enquiries received were many and varied and the interest shown by the General Public was very good.

One result of this very successful exhibition has been to draw attention to the need for pursuing actively the investigation into the Marketing of Sea Island cotton. It has become evident that the term "Sea Island" as applied to cotton is being freely abused to the detriment of the cotton growers in the British West Indies.

It is suggested that Council's opinion should be sought as to what steps should be taken to ensure that the name of Sea Island shall only be applied to goods made from yarn spun from *Gossypium Barbadense*.

The following is an account of the Buenos Aires Exhibition received by the West India Committee from the Department of Overseas Trade.

"I have to inform you that while the West India exhibit in the Buenos Aires Exhibition enjoyed a prominent position in the centre court and was consequently inspected by a great portion of the 1½ million visitors passing through the Exhibition no serious enquiries were received in the Pavilion as to sources of supply.

"I am to point out that trade conditions in the Argentine at the time of the Exhibition were unfortunately far from favourable and consequently few local business men were on the look out for immediate lines of development. It is felt, however, that your exhibit shared in the general good propaganda secured by the Exhibition as a whole among the Argentine people".

Visit of the Assistant Commissioner of Agriculture, Agricultural Advisory Department, Imperial College of Tropical Agriculture.

The Assistant Commissioner of Agriculture, Mr. G. A. Jones, visited St. Vincent and remained from October 5th—12th. He submitted a report of which a short account is given below :—

The first section of this deals with the re-organization of the Agricultural Department. With the appointment of the Cotton Research Officer, provided by the Empire Cotton Growing Corporation in 1930, and of the Assistant Agricultural Officer in October, 1931, on the staff of the Department, it was possible to re-organize and re-arrange the work.

The Cotton Research Officer undertakes the whole duty of breeding a pure strain cotton seed supply for planting purposes and thus relieves the Agricultural Department of a very considerable amount of work. The additional officer on the staff makes it possible to allocate special duties with regard to the marketing of fruits and vegetables and peasant instruction. The re-arrangement of these duties was recommended by the College Advisory Department and accepted by the St. Vincent Government.

Problems pertaining to the question of land settlement were considered and discussed.

He collected and submitted considerable information on the working of the St. Vincent Co-operative Arrowroot Association.

In his acknowledgements he expressed his appreciation of the help given to him by the Chairman and Secretary of the Arrowroot Board. He stated "I feel sure that the arrowroot industry stands to benefit greatly by the work of the Association assisted as it has been by the grant from the Colonial Development Fund and by the sympathetic support of His Honour the Administrator".

In the final paragraph Mr. Jones makes the following statement "In conclusion it is gratefully recognised that the steady work undertaken by the West India Committee on behalf of the Arrowroot industry has been of inestimable value and that the present enlightened attitude of mind is largely the result of its efforts. It is hoped that arrangements will be made for the continuation of this

work and that whilst the people on the spot can be relied on to do all in their power to maintain and improve the standard of the product, this excellent organization in London will continue to seek after new markets for this, the main industry of the Island of St. Vincent.

The St. Vincent Co-Operative Arrowroot Association.

It may interest readers if a short description of the above mentioned Association is given.

This body was created under Ordinance No. 15 of 1930, which came into force on December 23rd of that year. The formation of the Association was made possible by a grant from the Colonial Development Fund Advisory Committee. This was for £33,000, £30,000 being a loan bearing interest, and £3,000 a free gift.

The objects of the Association are :—

a. To acquire and market all arrowroot produced in the Colony and intended to be exported therefrom.

b. To grade, pack and warehouse arrowroot and to make advance payments on all arrowroot delivered to the Association Warehouses.

c. By means of voluntary control to market the crop more economically than can be done by the present method and thus reduce the cost to the consumer.

In the past there were twenty-six grades of arrowroot one for each letter of the alphabet. By mixing and blending these have been reduced to five grades ranging from extra superfine to fair. The greatest care is taken in grading and advance payments are governed by the grade into which the arrowroot is placed. Peasants receive for their first payment 25 per cent more than estate producers. A peasant is regarded as a grower who does not produce more than 50 barrels of arrowroot in one season. Final payments are made when final account sales for any grade in any year are received.

The affairs of the Association are controlled by a Board of not less than seven and not more than nine members. Of this number at least one officer of the Civil Service of the Colony shall be nominated by the Governor. Monthly Meetings of the Board are held and General Meetings twice a year.

The Association has built commodious buildings for the housing of its produce. The machinery for grinding, sifting and mixing arrowroot is modern and driven by electricity. In addition preparations are being made to erect machinery for packing, in $\frac{1}{4}$lb. and $\frac{1}{2}$lb. packages, pulverised and sifted arrowroot. The cartons for this purpose are neat and business-like in appearance, and they have printed arrowroot recipes on the cover and others are placed inside the package.

Arrowroot is received in the warehouses of the Association from estates packed in paper lined bags, except from certain districts where transport makes this form of package unsafe, when barrels are used.

Recently an order for 12,000 barrels of arrowroot was received by the Association from the United States of America. This is by far the largest order that has ever been received in St. Vincent, and it is suggested that it would not have been obtained if the Body in question had not been formed.

Agricultural Instruction, Education and Co-Operation.

The Report on Agricultural Credit Societies appears in another part of this publication. Agricultural Officers paid frequent visits to estates and peasant

holdings during the year. The Agricultural Superintendent attended forty meetings during the year, each dealt with matter pertaining to agriculture.

Science Teaching.

This work is done by the Science Master, Mr. D. S. Cozier, who is attached to the Grammar School. Mr. Cozier is an ex-student of the Imperial College of Tropical Agriculture, Trinidad.

Details of Staff and Administration.

The sum of £1,850 was voted for the upkeep of the Agricultural Department. The following gives details of expenditure :—

	£	s.	d.
Salary, horse and travelling allowance, Agricultural Superintendent	450	0	0
Salary, travelling allowance, house allowance, Agricultural Assistant for three months	139	13	4
Salaries, Foreman, Botanic and Experiment Stations, Cotton Inspector, Officers in Training (2), Clerical Assistant and Laboratory Assistant to Cotton Research Officer, and horse and travelling allowances, Agricultural Instructor and Cotton Inspector ...	431	16	3
Upkeep Botanic and Experiment Stations, (labour, manures, tools, seeds, etc.)	641	17	3
Destruction of food plants of the Cotton Stainer ...	15	10	3
Salary, horse and travelling allowance, Government Vaccinating Officer	30	0	0
Other charges, Government Veterinary Department ...	15	10	0
Special Cotton Investigations	32	10	6
Hagotan Hemp Machine	75	14	10
Total	1,832	12	5

Receipts.

The receipts for sale of plants and produce at the Botanic and Experiment Stations amounted to £69. 1. 11. There are outstanding debts amounting to £31. 9. 10, making a total of £101. 1. 9.

Correspondence and Distribution of Information on Agricultural Matters.

The number of minute papers dealt with amounted to 431 and the number of letters despatched was 1,171, in addition 221 reports were distributed.

Meteorological Observations.

The average rainfall for the past 38 years at the Botanic Gardens was 103·21 inches. The rainfall for 1931 was 100·62 inches, therefore 2·59 inches below the average.

Rain was recorded at the Botanic Gardens on 282 days; the heaviest fall was on October 6th when 3·27 inches fell. At the Experiment Station rain was recorded on 263 days, the heaviest fall being on October 7th when 4·20 inches fell.

The following table gives the mean temperature, average degree of humidity and the mean barometric pressure in inches for each month during the year :—

METEOROLOGICAL OBSERVATIONS, EXPERIMENT STATION, FOR 1931.

TABLE 13.

Month.	Mean Temperature F°.	Average degree of humidity Saturation 100.	Mean barometric pressure in inches.
January ...	77·6	71·0	29·969
February ...	79·0	69·0	29·981
March ...	80·8	71·4	29·977
April ...	82·0	71·6	29·944
May ...	82·0	72·0	29·926
June ...	81·0	72·7	29·978
July ...	81·2	74·5	29·970
August ...	82·0	77·6	29·982
September ...	80·4	73·2	29·935
October ...	81·4	75·8	29·909
*November ...	—	74·6	29·935
*December ...	—	70·4	29·957

* Thermometer out of order.

Atmospheric Pressure.

The reading of the barometer, corrected for instrumental error, elevation, temperature and latitude, ranged from 30·148 on March 27th to 29·800 on November 14th.

The following gives the rainfall recorded at the various stations for 1931 :—

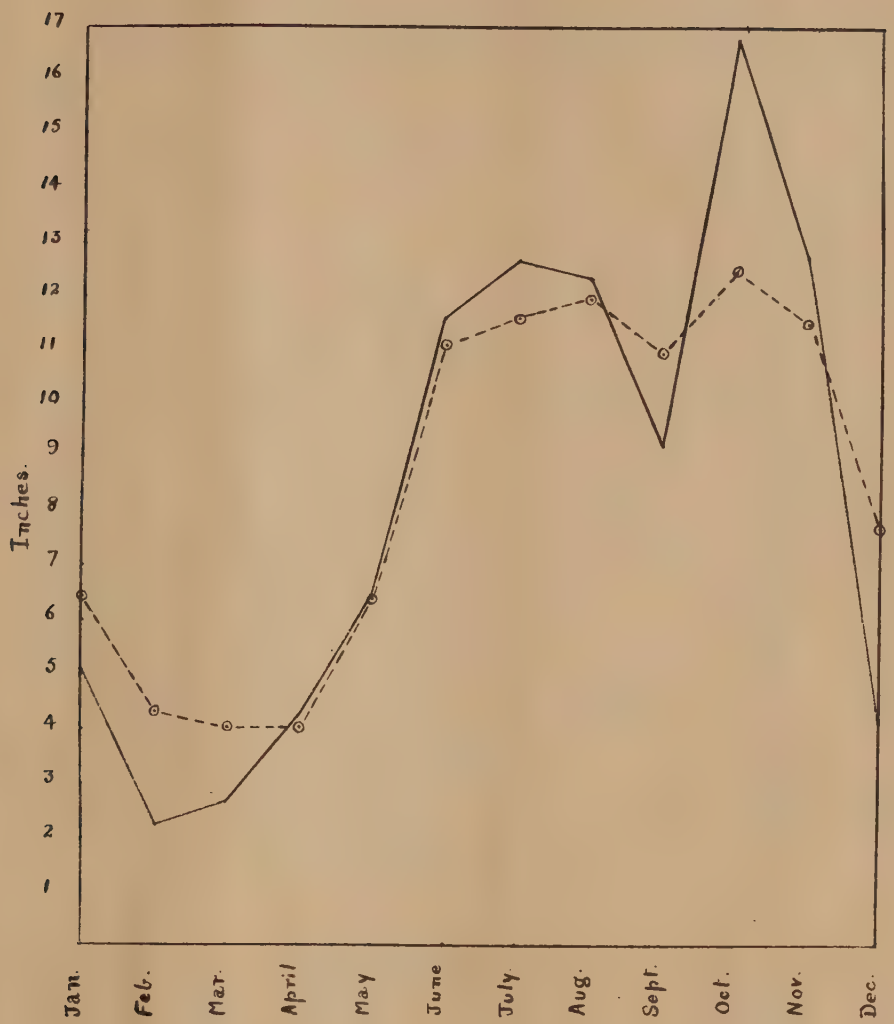
TABLE 14.

Stations.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Richmond Vale ...	5·44	1·35	2·22	3·48	4·67	13·48	22·87	16·04	12·22	22·58	16·96	8·50	129·81
Buccament ...	5·19	4·35	2·04	3·92	5·49	14·62	18·68	5·45	11·17	14·51	14·48	10·29	110·19
Botanic Station ...	5·01	2·25	2·71	4·28	6·59	11·69	12·74	12·34	9·26	16·82	12·80	4·14	100·62
Cumberland ...	1·21	1·68	1·64	1·68	3·87	10·76	20·18	13·29	8·77	18·81	13·24	4·02	99·15
Experiment Station ...	5·44	1·43	2·37	3·53	5·30	10·85	13·24	10 03	8·56	14·82	14·75	5·55	95·87
Grand Sable ...	4·70	1·56	2·45	3·71	5·63	8·24	13·86	7·27	13·66	9·54	13·59	5·32	89·53
Peters Hope ...	2·47	·53	1·33	1·45	3·32	10·64	15·22	12·50	8·78	16·63	10·09	3·20	86·16
Bequia ...	5·88	·70	3·39	2·84	4·20	7·97	13·03	9·22	5·56	16·74	11·00	3·72	84·25
Brighton ...	3·05	·60	3·19	3·45	2·59	6·14	9·71	6·71	6·58	11·25	10·90	2·89	67·06
Union Island ...	1·55	·28	·42	1·87	·42	3·27	4·90	3·94	3·49	6·84	5·67	1·50	34·15

Official Visitors, 1931.

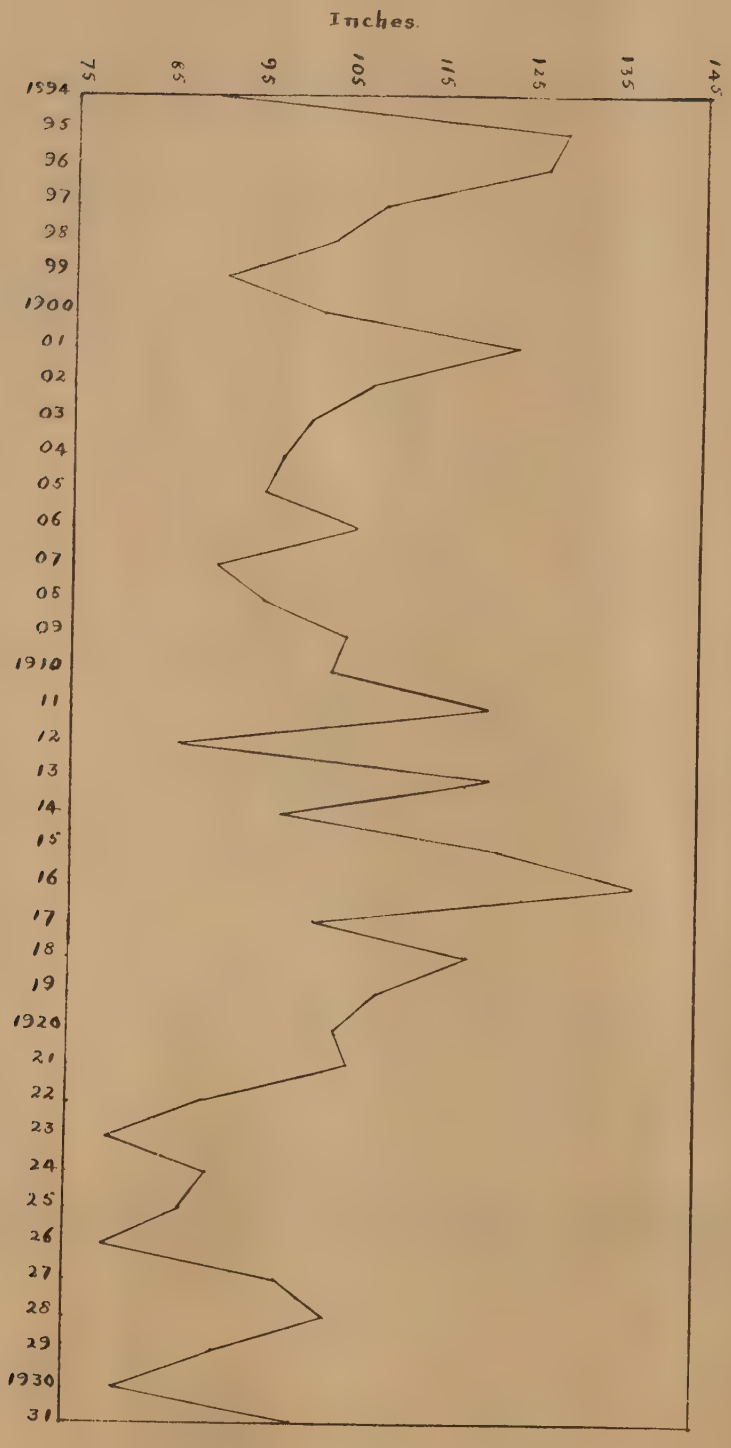
In January Professor Shephard, Professor of Economics, Imperial College of Tropical Agriculture, visited St. Vincent. The object of his visit was to report on the St. Vincent Agricultural Credit Societies.

Monthly Rainfall, Botanic Gardens, St. Vincent, 1894–1931.



Black line — represents Monthly Rainfall, 1931.
Dotted line — represents Mean Monthly Rainfall, 1894-1931.

Annual Rainfall, Botanic Gardens, St. Vincent, 1894–1931.



On March 2nd, Major R. D. Wheeler, Fruit Transportation Specialist, Department of Agriculture, Ottawa, landed in St. Vincent. He visited Government House and discussed with a party of planters and officials various problems connected with fruit transportation.

On April 7th, Professor Cheeseman, Professor of Botany and Genetics, Imperial College of Tropical Agriculture, accompanied by six post graduate students visited St. Vincent and remained until April 13th. During their stay they visited the Government Cotton Ginnery, the Experiment Station, Botanical Gardens, the Government Fruit and Vegetable Bureau and various land settlements and estates. On the day that they left another party of students with Professor H. R. Briton-Jones, Professor of Mycology and Bacteriology, Imperial College of Tropical Agriculture, who were on their way from St. Lucia to Trinidad, landed and visited the Government Cotton Ginnery, Botanic Gardens and an estate.

Mr. R. E. Montgomery, M.R.C.V.S., Adviser on Animal Husbandry to the Secretary of State, landed in St. Vincent on May 19th. He met planters who were interested in animal husbandry and visited an estate so as to form some idea of the type of animals kept on local plantations.

Mr. L. S. Glass, West Indian-Canadian Trade Commissioner, during a stay in the Colony in July visited the Experiment Station and the Government Fruit and Vegetable Bureau. He also attended a meeting of the Chamber of Agriculture and Commerce.

Mr. G. A. Jones, Assistant Commissioner of Agriculture, visited St. Vincent from October 5th to 12th. He subsequently submitted a report to Government on this visit which is commented on in another part of this Report. During the same month Messrs. Cooley and Kisliuk of the Bureau of Entomology, U. S. Department of Agriculture, Washington, spent a few days in the island. They were making studies of Fruit Flies in St. Vincent, other West Indian Islands, and in Central and South America.

Mr. A. C. Shill, M. Sc., Marketing Officer, Windward and Leeward Islands, visited St. Vincent from December 4th to 18th.

Other officials who landed for a short period and visited the Botanical and Experiment Stations were Professor H. A. Ballou, Commissioner of Agriculture, on two occasions, Dr. S. C. Harland, Geneticist, Empire Cotton Growing Corporation, and Dr. J. G. Meyers, Imperial Institute of Entomology.

Veterinary Report.

The microscopic examination of ears of animals for anthrax which was performed at the Colonial Hospital was discontinued as from 1st October,

The total sum expended on Veterinary work was made up as follows :—

	£	s.	d.
Salary and travelling allowance, Government Vaccinating Officer	30	0	0
Burial of Carcasses	15	10	0
Total	£45	10	0

Anthrax.

No case of anthrax was diagnosed.

Exports.

The following gives the number of animals exported for which no certificates were given :—

TABLE A.

Class of Animal.	Number.	Value £.
Sheep ...	522	309
Goats ...	2,375	822
Pigs ...	1,574	2,923
Total ...	4,471	4,061

TABLE B.

Showing kind, number and value of stock for which veterinary certificates were given, also the places to which the animals were exported.

Class of Animals.	Barbados.		Trinidad.		St. Lucia.		Grenada.		Total.	
	No.	Value £	No.	Value £.	No.	Value £.	No.	Value £.	No.	Value £.
Cattle ...	7	65	1	5	31	108	3	11	42	189
Horses ...	4	58	—	—	—	—	—	—	4	58
Mules ...	2	29	—	—	—	—	—	—	2	29
Asses ...	14	13	12	17	3	4	—	—	29	34
Total ..	27	165	13	22	34	112	3	11	77	310

TABLE C.

Thirty-three animals valued at £128 were imported. With the exception of five horses valued at £30, all the other animals were imported for breeding purposes.

Class of Animal.	Number.	Value £.
Horses ...	6	55
Sheep ...	15	61
Goats ...	6	7
Pigs ...	6	5
Total ...	33	128

Certificates were granted for 2,293 hides valued at £209.

Report on the Agricultural Credit Societies.

In the Report for the year 1930 on these Societies it was stated, "Land Settlement Schemes, when inaugurated, and Agricultural Credit Societies should dovetail to a very great extent. There is a movement on foot at the present time to further the extension of land settlement areas in the Colony. Several estates were offered for sale by planters and of these two have been selected as being suitable. One of these is situated on the Leeward part of the island and the other on the Windward. In October last, Mr. P. Morrison arrived in the island. The extension of land settlements and the reorganising of the Credit Societies will form part of his duties.

The following gives a short report of the four Societies that are now functioning.

Clare Valley—Questelles. All the loans contracted in 1930 were repaid, and a further loan of £50 was obtained, the repayment of which falls due in August 1932. This was borrowed from a private individual, the interest being at 7 per cent.

Redemption. This Society has repaid all loans.

Troumaca. The loans of £100 contracted from a Provident Society and that of £90 from a Temperance remain unpaid. These were contracted in 1928, the interest being at the rate of 6 per cent. It might be reiterated that many members of the Agricultural Credit Society are also members of the Provident and Temperance Societies.

Georgetown. This Society has paid off all loans.

Statement of Transactions.

	£	s.	d.
Loans obtained in 1931	50	0	0
Total loans since their inception	36,328	6	8
Interest on loans during 1931	14	18	0
Loans outstanding other than those contracted in 1931	190	0	0

REPORT ON THE GOVERNMENT FRUIT AND VEGETABLE BUREAU, 1931.

The Manager of the Bureau was assisted by means of an Advisory Committee. In addition to this there was formed during the year a small Executive Committee consisting of four members. During the year six meetings of the Advisory Committee were held and seven meetings of the Executive Committee. The Agricultural Superintendent was Chairman of these Committees until November when the Agricultural Assistant, who is Manager of the Bureau, took his place.

It is with sincere regret that the writer has to record the death of Mr. M. T. Horner, Manager of the Government Fruit and Vegetable Bureau, which took place in May last. Mr. Horner did a great deal of pioneer work in connection with the inauguration of the Bureau. Mr. P. Morrison was appointed in his place on October 6th, 1931. During the interval the duties of Manager was carried out by the Agricultural Superintendent assisted by Mrs. H. Grist.

During the year Mr. A. C. Shill, M.Sc., was appointed Chief Marketing Officer. This Officer's duties are to advise on the preparation, packing and disposal of fruit and vegetables from the Windward and Leeward Islands, and to co-ordinate their exportation and to supervise in this connection the work of the local officers who are responsible for the various Government Packing Houses. This appointment was made possible by financial assistance given on the recommendation of the Colonial Development Advisory Committee. During the year Mr. Shill spent two weeks in St. Vincent from December 4th to December 18th, When in the Colony he conferred with His Honour the Administrator, in matters pertaining to the fruit and vegetable trade, inspected the most important of the packing houses, and revised the Exportation of Fruits Ordinance.

This appointment is one of considerable importance, not only to St. Vincent but to other West Indian Islands concerned. The fruit and vegetable trade is a carefully organised one, and local officers concerned in it will much appreciate the help that can be obtained from an Officer who has specialised in this.

In the following table the quantity of produce exported by the Bureau for 1931 is given, that for 1930 is also put forward for comparison.

TABLE 15.

Produce.	1930.		1931.	
	Crates.	Lb.	Crates.	Lb.
Avocado Pears ...	555		572	
Beet Root ...	3		2	
Cabbages ...		720		428
Cucumbers ...	15		14	
Eschalots ...		400		229
Ginger ...		350		100
Guava Jelly ...		252		
Grapefruit ...	121		10	
Limes ...	150		195	
Mangoes ...	236		285	
Mace ...		230		
Nutmegs ...		1,610		
Oranges ...	30		17	
Onions ...		2,350		832
Pumpkins ...		4,750		13,899
Peanuts ...		2,200		2,848
Peas ...		660		148
Pineapples ...	5		6	
Potatoes ...		784		
Tangerines ...	5		1	
Tomatoes ...	674		1,770	
Yams ...		640		2,793
Miscellaneous ...			12	50
Totals ...	1,794	14,946	2,885	21,327

It will be seen that from the table given above the number of crates of produce shows an increase over the previous year of 1,091 or some 60 per cent, the number of pounds of produce an increase of 6,381 lb. or some 43 per cent.

The quantity of Avocado pears shipped during 1931 was slightly in excess of those sent out during the previous year. They were shipped to Bermuda, Barbados, Demerara and London. Bermuda received the majority. There is a

fair, but by no means an unlimited demand for avocadoes, in this market. If care is not exercised it can easily be flooded as this type of fruit is sent there not only by St. Vincent but also by St. Lucia, Dominica and Jamaica. Of the quantity shipped 503 crates were sent to this market, 39 were sent to London and 30 tc Barbados and Demerara. On the whole the shipments to Bermuda were remunerative, those to Barbados and Demerara were not. Two consignments were sent to England, one consisting of seventeen crates and one of twenty-two. The first consignment was financially successful and £13. 0. 4 was obtained for them. In connection with this consignment it should be said that complaints were received from the persons who used the pears to the effect that they had not ripened properly after the cold had left them. Instead of keeping their green colour the skin turned a dark brown and the flesh black. The second consignment was a failure and they were sold for 19/- in England. Practically all the fruit was received in an unsatisfactory condition.

The above clearly indicates that experiments should be conducted as to discover the correct temperature at which Avocado pears should be stored. This can now be done as the erection of a cooling plant in St. Vincent is now completed.

Small consignments of cabbages, beet root, cucumbers, eschalots and ginger were sent to intercolonial markets; no guava jelly was exported.

Slightly more limes and mangoes were shipped than in the previous year. Bermuda took the majority of the limes and remunerative prices were obtained; in New York prices were depressed.

The majority of the mangeos were common types of good flavour. Bermuda proved a remunerative market for them.

Grafted mangoes were sent to Canada and London. This fruit is not well known in Canada, the Agent stating in one instance "These at present are not well known but we believe that there should be an opportunity to create a demand for them. This shipment was considered very nice" and again "The quality of the fruit received from you was first class". Prices for these in Canada were low being little more than 4/2 per crate. There were approximately twenty-five fruit in each crate.

Two consignments of grafted mangoes consisting of twenty and fourteen crates respectively were sent to England. The number of mangoes in the first lot were 402 and in the second 392. An average price of 6·7d. and 5·6d. per fruit was obtained. In the first consignment 102 of the fruit were useless, and in the second 47. The maximum price obtained per fruit was 1/-. Results of these shipments combined with those of others clearly indicate that the problems connected with forwarding of mangoes to England have not been completely solved.

The quantity of onions shipped shows a decline, but this is but little indication of the quantity grown as there is always a good local demand for this vegetable.

Pumpkin shipments show a large extension having increased almost threefold. Practically all were shipped to Bermuda, where a steady price was maintained. The growers of this vegetable were paid ½d per pound, such a price is regarded as a good one for previous to the inauguration of the Bureau, the demand for pumpkins was poor, at times, they were unsaleable.

Nutmegs, mace and potatoes were not purchased or exported during the year.

When all factors are taken in consideration the increase in the numbers of crates of tomatoes shipped is satisfactory. In 1930, 674 crates were sent out and in 1931 this had increased to 1,770, an increase of 1,096 or 162 per cent. In the past, tomatoes for the Canadian Steamers were received at the various centres for packing on two or three days each fortnight, this resulted, when handling such a crop as the one under consideration, in considerable loss as those which ripened during the interval had to be placed on the local market. This was one that could only absorb limited quantities and loss ensued. At the time of writing the erection of a precooling plant in Kingstown has just been completed and

tomatoes can now be accepted for shipment at almost any time between the arrival of steamers. The eréction of this plant will result in giving to local tomato growers a feeling of confidence, and a large increase in the growing of this crop may be looked for.

During the season a flat rate of 1d. per pound was paid to peasants and others who brought green tomatoes to the Bureau, at the same time a bonus to be calculated on the receipts obtained, was promised. The tomatoes were graded, packed and shipped and after deducting expenses a bonus of $\frac{3}{4}$d. per pound was declared and paid to vendors. It is pleasing to be in a position to state that the peasants were perfectly satisfied with this.

During 1931, letters of a laudatory nature were received from the Agents in Canada who handled the tomatoes shipped by the Bureau. The following gives extracts from these:— "We are of the opinion that your tomatoes are standing up well", "We find that the trade prefer tomatoes grown in St. Vincent". "Your shipments have been quite satisfactory, and we believe that the trade prefer your tomatoes to those coming from some of the other islands".

It should be stated that a trial shipment of ten cases of tomatoes was sent to London in February. This statement was made :—"The tomatoes were quite unsuited to the English market. They arrived in a green and pinky condition which indicated that they would not ripen properly". Subsequent information confirmed this latter statement. The variety shipped was Bonny Best. It was thought possible that others might possess superior shipping qualities and to test out this experimental shipments were made to Canada with varieties known as "The Fruit", "Marglobe", "Teneriffe" and "Jersey Special". When reporting on these varieties the Agent in Canada stated "there would not be any advantage in changing". It was further stated that the variety Teneriffe was "quite satisfactory". With reference to "Jersey Special" it was said "We found that these compared very favourably with those you have been shipping in regard to colour keeping qualities, etc. They appear to contain more juice and less pulp than some varieties and we would not recommend them for this reason". From the preceding it would not appear as though any of the varieties were superior from a commercial view point to "Bonny Best", although Teneriffe was quite satisfactory.

The following Statement has been prepared by Mr. P. Morrison, Manager, Government Fruit and Vegetable Bureau :

FINANCIAL STATEMENT OF GOVERNMENT FRUIT AND VEGETABLE BUREAU
DECEMBER, 1931

Dr.	£	s.	d.		£	s.	d.	*Cr.*
December 31st 1931.				By value of crates ...	37	15	0	
To amount advanced by Treasury ...	496	6	4	„ „ „ Baskets ...	15	0	0	
„ amount loaned by Government Cotton Ginnery...	101	6	8	„ „ „ Labels ...	64	4	2	
				„ „ Wrapping Paper ...		12	6	
				„ „ Brooms and Whisks	1	11	4	
				„ „ Preserves ...	4	2	9	
				„ „ Empty bottles ...	9	7	11	
				„ „ Produce on hand ...		4	0	
				„ „ Produce shipped and not accounted for ...	53	1	1½	
				„ „ Machinery, Pots, Pans, £46. 3. 5 less 10% depreciation ...	41	11	1	
				„ „ Packing sheds fittings ...	35	0	0	
				Excess Liabilities ...	335	3	1½	
	£597	13	0		£597	13	0	

REPORT ON THE WORKING OF THE GOVERNMENT COTTON GINNERY FOR PERIOD 1st OCTOBER, 1930 TO 31st DECEMBER, 1931.

This Report was written by the Acting Manager, Government Cotton Ginnery.

Ginning and Baling.

Seed Cotton received for ginning amounted to 1,308,070 lb. made up of 1,204,308 lb. white seed cotton and 103,762 lb. stained. The total quantity received during the previous season was 630,674 lb. made up of 577,692 lb. of white and 52,982 lb. stained. There was therefore an increase of 677,396 lb. during the year under review.

The lint obtained from the white Sea Island cotton amounted to 329,830 lb. and that from the stained to 27,157 lb. making a total of 356,987 lb. The figures for the previous year were 160,174 lb. from white cotton and 14,290 lb. from stained, giving a total of 174,464 lb., so that there was an increase of 182,523 lb. in the totals.

Oil Expressing.

The total quantity of seed from which oil was expressed was 1,531,108 lb., which included 473,893 lb. received from the Kingstown Cotton Factory, 103,761 lb. from another Ginnery, and 107,980 lb. of Marie Galante seed obtained from cotton ginned at Union Island in the St. Vincent Southern Grenadines. The quantity of seed from which oil was expressed during the previous year was 772,612 lb. so that there was an increase of 758,496 lb.

The quantity of oil refined was 10,748 gallons, and 4,050 bars of soap were manufactured from the residue of the oil refining vats. There are still on hand 5,360 gallons of crude oil to be refined.

Purchase of Cotton on the Co-operative System.

The advances made on Sea Island cotton for the 1930-31 crop were 5 cents per lb. on white, and 1 cent per lb. on stained. 567,811 lb. of white and 31,471 lb. of stained cotton were purchased, and the respective yields of lint were 156,025 lb. and 8,574 lb. making a total of 164,599 lb. The quantity purchased during the preceding year was 91,328 lb. which consisted of 85,892 lb. of white Sea Island cotton and 5,436 lb. of stained. There was therefore an increase of 507,954 lb. in the total quantity purchased.

There were 30 bales of white cotton for the 1929-30 crop, 298 bales white, and 24 bales stained from the 1930-31 crop remaining unsold at the close of the year ; of these 78 bales of white were at the Ginnery not shipped. The 30 bales from the 1929-30 crop were sold after the close of the period under review.

Purchase of Corn on the Co-operative System.

53,019 lb. of shelled corn and 7,291 lb. of corn on the cob were purchased on the co-operative system, as compared with 3,010 lb. shelled corn and 547 lb. cob corn during crop 1929-30. (There was very little corn offered for sale to the Ginnery during the 1929-30 crop.) There was therefore an increase on the previous year of 50,009 lb. shelled corn, and 6,744 lb. cob corn.

The advances paid were $1·25 per 100 lb. for shelled corn and 88 cents per 100 lb. on the cob. A bonus of 100% was paid on the 1929-30 crop in November 1931.

Other Transactions.

58,005 lb. of corn were kiln-dried, 15,082 lb. were shelled, 54,215 lb. were ground into meal or stockfeed. Grain &c. fumigated and stored in the moth-proof rooms of the Ginnery, apart from corn purchased totalled 31,581 lb. and consisted of 10,594 lb. Peas, 20,370 lb. corn and 617 lb. cotton seed.

5,548 lb. cotton seed were selected and disinfected for planting. Of this quantity 3,780 lb. were from seed purchased by the Ginnery for sale to peasants, the remaining 1,768 lb. having been prepared for planters. In addition to the stained cotton seed obtained from cotton ginned at this Ginnery, 40,524 lb. received from the Kingstown Cotton Factory, and 4,208 lb. from another Ginnery were disintegrated for use as manure.

General.

On the 5th January, 1931, Mr. C. H. Findlay, Manager, was seconded for service as Secretary-Treasurer of the St. Vincent Co-operative Arrowroot Association, but continued to perform the duties of Manager in conjunction with his new appointment until the 31st March, 1931. Mr. A. W. Dowers, the Overseer, acted as Manager from 1st April to 3rd May, and Mr. C. B. Isaacs from 4th May to 31st August. Mr. Isaacs was transferred to the Audit Department on 1st September, from which date Mr. Dowers resumed the acting appointment of Manager, and Mr. C. Bute the Cotton Purchaser, assumed the duties of Overseer. The Pay-Officer, Mr. C. H. Fraser was appointed to act as Cotton Purchaser from the 1st September. Miss E. Cropper, Clerical Assistant, resigned on the 8th December, 1931. Her successor Miss Ena Forde, did not assume duty until after the close of the year.

The following is a summary of the transactions for the past two years:—

	1929-30.	1930-31.
Seed Cotton received and ginned -	630,674 lb.	1,308,070 lb.
Cotton Seed expressed -	772,612 ,,	1,531,180 ,,
Seed Cotton disintegrated -	36,868 ,,	116,527 ,,
Cotton Seed purchased -	91,328 ,,	599,282 ,,
Corn purchased -	3,557 ,,	60,310 ,,
,, kiln-dried -	5,214 ,,	58,005 ,,
,, shelled -	7,600 ,,	15,082 ,,
,, ground into meal or stockfeed	63,833 ,,	54,215 ,,
Cotton Seed selected and disinfected for planting -	6,829 ,,	5,548 ,,
Cotton Seed selected only -	1,708 ,,	...
,, ,, disinfected ,, -	...	338 ,,
Grain &c. fumigated and stored -	32,639 ,,	31,581 ,,
Cotton Seed Oil refined -	5,969 gals.	10,748 gals.
Soap manufactured -	4,535 bars	4,050 bars
Cotton Seed meal delivered -	350 tons	600 tons.